VILLANOVA UNIVERSITY
Department of Electrical and Computer Engineering
Fall 2020

ECE 3720
Engineering Probability and Statistics

Course Objectives: To provide a foundation for probability theory and practice: Basic set theory, axioms of probability, probability relationships, concept of a random variable, joint random variables. Selected topics in statistics from: estimation, hypothesis testing and regression. Selected topics from: functions of a random variable, random processes, Markov chains, applications (e.g. reliability, queuing, microprocessor control, digital communications, detection).

Prerequsites: Junior CPE or Junior EE standing.

Corequsites: None

Text: *Elements of Engineering Probability & Statistics*, by Rodger E. Ziemer, Prentice Hall, Inc., Latest Edition.

Software: Matlab and Excel

Course Requirements:

Attendance: Required. (In class attendance sign in sheet)
Class and laboratory attendance for first-year students is mandatory. A first-year student will receive a grade of "Y" (failure) whenever the number of unexcused absences in a course exceeds twice the number of weekly class meetings for the course. Where possible, students should inform their instructors if they plan to be late or absent from class. In all cases, students should be prepared to provide documentation to petition for excused absences to the Associate Dean for Student and Strategic Programs, Dr. Stephen Jones. The form for requesting an excused absence can be found here (http://www1.villanova.edu/villanova/engineering/resources/policies/forms/studentAbsence.html). Excused absences do not count toward a failure in the course for first year students. Absence from class does not release the student from work assigned. Students who miss an in-class obligation (exam, presentation, etc.) due to an excused absence will not be penalized - the instructor may offer a make-up test, arrange an alternative time for a presentation, exempt a student from the assignment, or provide another arrangement.
The University's list of excused absences for all students includes the following:

- participation in NCAA athletic competitions
- participation in special academic events (e.g., conferences, field trips, project competitions)
- participation in official university business (e.g., student representatives attending meetings related to university governance)
- attendance at significant events involving the immediate family (e.g., funerals, weddings)
- religious holidays - see the University's policy on Religious Holidays
- college-approved participation in placement activities (e.g., job interviews, graduate school interviews, attending job fairs)
- documented serious illness or disability

Grading Policy:

Examination 1*	..30% (Sept. 17th)
Examination 2*	..30% (Oct. 15th)
Examination 3*	....30% (TBA)
Quizzes* and Assignments	.....10%
	100%

*Consult Academic Integrity below.

Important Note: In the case of a student being absent from an examination an official excused absence must be provided. To be eligible for a makeup examination the student must first obtain an official excused absence from the College of Engineering Associate Dean for Student and Strategic Programs per the procedure in the section above on attendance. The window for initiating an official COE excused absence request is within twenty four hours after the exam. The instructor must be notified when the excused absence request is submitted.

Academic Integrity:

The College of Engineering is committed to creating an environment of academic integrity and ethical decision-making that we hope is reflected in the actions of our students and graduates. As Villanova students, integrity is central to the University mission. As engineers, our code of conduct requires us to place honor and integrity at the forefront of everything we do. As engineering students, it is expected that you will begin to adopt these values and instill them into your work habits. Students violating the academic integrity policy will receive a zero on that assignment or exam and the violation will be reported to the Associate Dean for Academic Affairs.

The University's academic integrity policy can be found here:
https://www1.villanova.edu/villanova/provost/resources/student/policies/integrity.html.

The College of Engineering has adopted the following exam guidelines:

- Students must arrive before the start of the exam. Under exceptional circumstances a student may need to arrive late, but he/she can enter the exam no later than 5 minutes after the start of the exam.
- All cell phones must be turned off and stored away until the student exits the exam room.
- The official Villanova class attendance policy must be followed when requesting excuses for absences or lateness to an exam.
- Each student must write and sign the following statement, "I have neither given nor received any unauthorized assistance in the completion of this exam."

Students with Disabilities:

It is the policy of Villanova to make reasonable academic accommodations for qualified individuals with disabilities. If you are a person with a disability please contact me after class or during office hours to make arrangements. If you have a non-physical disability you need to register with the Learning Support Office by contacting 610-519-5176 or at learning.support.services@villanova.edu as soon as possible. Registration is needed to receive accommodations. The Office of Disability Services collaborates with students, faculty, staff, and community members to create diverse learning environments that are usable, equitable, inclusive and sustainable. The ODS provides Villanova University students with physical disabilities the necessary support to successfully complete their education and participate in activities available to all students. If you have a diagnosed disability and plan to utilize academic accommodations please contact and register with Gregory Hannah, advisor to students with disabilities @ 610-519-3209 or visit the office on the second floor of the Connelly Center.

Topics and Schedule (Tentative):

Topics	No. of Classes
Probabilistic Framework and Motivation	7
Probability Characterization and Properties	6
Random Variable	4
Joint Random Variables	4
Statistics Framework and Motivation	6
Estimation	4
Random Processes	6
Selected Topics	5

Outcomes: *1-An ability to apply knowledge of mathematics, science, and engineering.*